

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: ~~Complaint Investigation~~ *C.H.*

A404348388

FACILITY: Dow Silicones Corporation		SRN / ID: A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Jennifer Kraut , Air Specialist		ACTIVITY DATE: 03/06/2019
STAFF: Gina McCann	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU501-01, EU501-02, EU501-49 and EU501-08 (FGRULE290 unit)		
RESOLVED COMPLAINTS:		

Inspection Date: 3/6/2019

Inspection Started: 8:30

Inspection Ended: 12:30

DOW Silicones/MDEQ-AQD staff present during the inspection:

- Gina McCann (MDEQ-AQD, Senior Environmental Quality Analyst)
- Jennifer Kraut (Air Specialist, DOW Silicones)
- Sara Bennett (Aire SME, Dupont)
- Nate Blaszak (Building 501 Production Engineer, DOW Silicones)
- Chris Davis (Building 501 Production Engineer, DOW Silicones)
- Leah Olson-Perry (Environmental Specialist, DOW MiOps)
- Tom Wood (501 Building Production Leader, DOW Silicones)
- Cory Pickvet (501 Building Operations Leader, DOW Silicones)

Records reviewed as part of the inspection were:

- ROP Annual report for 2017
- ROP Semiannual report for reporting period 1/1/2018-6/30/2018
- 40 CFR Part 64 CAM excursion/exceedance report for 1/1/2018-6/30/2018
- 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018

EU501-01

Intermediate viscosity (IV) and very low viscosity (VLV) silicone fluid manufacturing process. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. The most recent PTI for this emission unit is PTI No. 158-87B.

- Carbon drum system- Plant currently vents to 5 drums in series; however, the number of drums may vary. The last drum is placed on a scale and weighed periodically to prevent breakthrough.

Five process streams feed the carbon drum system; product 12884, 6257, 12889, 4232 and 5581.

Special condition (SC) requires the weight increase of the last carbon drum (i.e., drum prior to discharge) within the carbon drum system to not exceed 45 pounds. SC VI.1. is the associated monitoring and recordkeeping requirement. The plant is required to record, at least once per shift, the weight of the last carbon drum within the carbon drum system. Previously, operators recorded weight on the last carbon drum on hand written logs. Currently, the weight is electronically logged, continuously, and the 15-minute averages are used to determine compliance.

During the inspection we viewed this data in the control room. The weight of the last carbon drum in the system was 21.47 pounds. We also viewed the physical scale with a drum on it, which meets the requirements of SC IX.2. A local readout displayed similar weight of the last carbon drum. The high alarm was set at 38 pounds and the secure process alarm (SPA) was set at 39 pounds. The SPA alarm restricts operators and process engineers from changing the setting. Access is only granted by certain personnel.

I reviewed data from January 1, 2018 through February 28, 2019. There were several instances when the weight spiked above 45 pounds on the last carbon drum. Most instances were due to accidental weight put on the scale while maintenance was being performed and the 15-minute average had not exceeded 45 pounds. One exception was on 2/27/2019 when the graph identified a spike above 45 pounds. The

process was shutdown during this time and the instrument was being calibrated. The 15-minute average was greater than 45 pounds due to the calibration range. During the inspection we discussed an actual breakthrough on the carbon drums, last carbon drum weight over 45 pounds, would show a gradual increase on the graph rather than a sharp spike. AQD staff agreed with this logic.

SC VI.3. requires the plant to calculate and record emissions from the process for the previous calendar month, within 30 days following the end of each calendar month, to demonstrated compliance with the 12-month rolling VOC and Methyl Siloxane emission limits in SC.1.2 and 4, respectively. I reviewed the 12-month rolling time period ending January 2019. VOC emission were 0.266 ton per year (tpy) and Methyl Siloxane emissions were 1.20 tpy under the permitted values of 0.5 tpy and 4.2 tpy, respectively.

SC IX.1. restricts the operation of the process unless the carbon drum system is installed and maintained properly. The process engineers provided 6/29/2017 and 4/15/2018 as the last two dates of calibration for the system.

Compliance Reporting

I reviewed the ROP Annual report for 2017, the ROP Semiannual report for reporting period 1/1/2018-6/30/2018, 40 CFR Part 64 CAM excursion/exceedance report for 1/1/2018-6/30/2018 and 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018. No deviations were reported.

EU501-02

1107 hydrolysis process, including tanks 4160 and 23535. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. EU501-02 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The most recent PTI for this emission unit is PTI No. 126-03A.

The 1107 process is a continuous process that manufacturers one product with two different viscosities. Chlorosilanes react with water and gaseous HCl is a by-product removed from the system and, under normal circumstances, sent to 311 building for further purification. Heptane is used as a serratation aid which is removed from the process stream once it has served its purpose. The whole process is shutdown every two years for a complete maintenance.

- Venturi scrubbers (4109, 7585). These devices are CAM subject units for VOCs.

SC III.1. restricts the liquid flow rate of venturi scrubber 4109 during startup, shutdown and emergency conditions to greater than 18 gallons per minute (gpm). During the inspection the liquid flow rate was 3.9 gpm, the process was not diverted to this scrubber. The SPA alarm was set at 20 gpm.

SC IV.1. requires scrubber 4109 to be installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the scrubber includes maintaining a minimum liquid flow rate of 18 gpm. SC VI.3. is the associated recordkeeping requirement to record the liquid flow rate of scrubber 4109 during the startup, shutdown, and emergency conditions. I reviewed liquid flow rate data from January 1, 2018 through March 5, 2019. There were six separate instances where vents were diverted to 4109 scrubber. During these time periods, the scrubber maintained the liquid flow rate above 18 gpm, when the process was in operation.

SC VI.5. requires the plant to maintain a log of each startup, shutdown and emergency operation conditions. Including the date, time, duration, and cause of the emergency operation condition. I reviewed the logs for the associated six events discussed above.

SC III.2. restricts the liquid flow rate for venturi scrubber 7585 during process operations in EU501-02 to greater than 1.5 gpm. Liquid flow rate was 2.5 gpm during the inspection and the SPA was set at 1.7 gpm. SC VI.2. is the associated recordkeeping requirement to monitor and record the liquid flow rate for venturi scrubber 7585. SC IV.2. requires scrubber 7585 to be installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the scrubber includes maintaining a minimum liquid flow rate of 1.5 gpm. I reviewed liquid flow rate for venturi scrubber 785 from January 1, 2018 through March 5, 2019. Flow was greater than 1.5 gpm during times the process was in operation.

SC III.3. requires the plant to calibrate the liquid flow measurement devices for scrubbers 4109 and 7585. I did not request calibration information for these devices.

SC VI.4 requires the plant to calculate the VOC emission rate from EU501-02 monthly, for the preceding 12-month rolling time period. VOC emission limits for a 12-month rolling time period, SC I.2. is 5.9 tpy. I reviewed VOC emissions data for the 12-month rolling time period ending January 2019 and VOC emissions were 2.45 tpy.

SCs VI.6, VI.7, VI.8 and VI.9 are CAM requirements. The compliance reporting section below references deviations and/or actions taken to mitigate deviations. The plant appeared to be in compliance with the conditions.

Compliance Reporting

I reviewed the ROP Annual report for 2017, the ROP Semiannual report for reporting period 1/1/2018-6/30/2018, 40 CFR Part 64 CAM excursion/exceedance report for 1/1/2018-6/30/2018 and 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018. No deviations were reported.

EU501-49

Low viscosity fluids and 3-component fluids process including reactors, tanks, condensers, and a vacuum system. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. EU501-49 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The most recent PTI for this emission unit is PTI No. 437-90B.

• Condensers (15091, 4358). These devices are CAM subject units for VOCs

SC III.1. requires condenser 15091 to maintain an annual average service water temperature below 80 degrees Fahrenheit (F). SC VI.2. is the associated monitoring and recordkeeping, on a continuous basis, condition. SC VI.3. is the associated monitoring and recordkeeping that requires the plant, within 30 days following the end of each calendar month, to calculate and record the average service water inlet temperature for condenser 15091 for the 12-month rolling time period ending that month. During the inspection condenser 15091 was 67.8F. I reviewed the 12-month rolling time period ending January 2019 and the service water inlet temperature, for condenser 15091, was maintained below 80F.

SC III.2. requires the service water return temperature of condenser 4358 to be less than 95F, while the batch kettle is operating. Corrective action shall be implemented if the service water return temperature of condenser 4358 exceeds 95F. SC VI.1. is the associated monitoring and recordkeeping requirement to monitor and record, on a continuous basis, the service water return temperature of condenser 4358. During the inspection the service water return temperature of condenser 4358 was 18.5 Celsius or 65.3 F. I reviewed the service water return temperatures of condenser 4358 from January 1, 2018 through March 5, 2019. During times of operation, the service water return temperature of condenser 4358 did not exceed 95F.

SC III.3. requires the plan to calibrate the temperature gauge for condensers 15091 and 4358 in a satisfactory manner. The temperature probes on vent condenser 15091 were last calibrated on 7/25/2018. Calibration data for condenser 4358 was not requested.

SC VI.4 requires the plant to calculate the VOC emission rate from EU501-49 monthly, for the preceding 12-month rolling time period. VOC emission limits for a 12-month rolling time period, SC I.2. is 9.3 tpy. I reviewed VOC emissions data for the 12-month rolling time period ending January 2019 and VOC emissions were 1.99 tpy.

SC VI.5 requires the plant to calculate the MM emission rate from EU501-49 monthly, exhausting through SV501-018, for the preceding 12-month rolling time period. MM emission limits for a 12-month rolling time period, SC I.4. is 23.7 tpy. I reviewed VOC emissions data for the 12-month rolling time period ending January 2019 and VOC emissions were 6.05 tpy.

SCs VI.6, VI.7, VI.8 and VI.9 are CAM requirements. The compliance reporting section below references deviations and/or actions taken to mitigate deviations. The plant appeared to be in compliance with the conditions.

Compliance Reporting

I reviewed the ROP Annual report for 2017, the ROP Semiannual report for reporting period 1/1/2018-6/30/2018, 40 CFR Part 64 CAM excursion/exceedance report for 1/1/2018-6/30/2018

and 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018. No deviations were reported.

EU501-08 (FGRULE290)

- Scrubber 7533 (Azeoll)

EU501-08 is like the 1107 process (EU501-02). More water is used in this process therefore instead of gaseous HCl, the byproduct is aqueous HCl. The aqueous HCl is recovered in the 340 building. This unit processes two products, which are subject to the MON, 40 CFR Part 63 Subpart FFFF, Group 2, for halogens.

According to SC III.2.a. of FGRULE290 an air cleaning device for volatile organic compounds shall be installed, maintained, and operated in accordance with the manufacturer's specifications. As part of the records request, I viewed the liquid flow rate of scrubber 7533 for the time period January 1, 2018 through January 31, 2019. Flow was maintained to above 2 gpm when the process was in operation.

VOC emissions from this process unit are exempt from permitting through compliance with R290. As part of the records request, exemption summaries were provided. Based on R290, emissions that are classified as non-carcinogenic VOCs or non-carcinogenic air contaminants with an initial threshold screening level (ITSL) $\geq 2.0 \mu\text{g}/\text{m}^3$, controlled, and are limited to less than or equal to 500 pounds per month (lbs/month).

I reviewed emissions records from February 2018 through January 2019. Emissions were below the R290 limit and constituents appeared to be aligned categorically with R290.

Calibration of the flow transmitter was last performed, on the Azeoll scrubber, on 6/15/2018 and 6/29/2017.

Compliance Reporting

I reviewed the ROP Annual report for 2017, the ROP Semiannual report for reporting period 1/1/2018-6/30/2018, 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018. No deviations were reported.

NAME

Michelle McAnn

DATE

4/9/2019

SUPERVISOR

C. [Signature]